

SUBJECT: Status of Apollo 14 ALSEP/CCGE Deployment - Case 340

DATE: December 24, 1970

FROM: G. K. Chang

MEMORANDUM FOR FILE

On the basis of a year's seismic records, G. Latham, the principal investigator for the ALSEP Passive Seismic Experiment (PSE), has concluded that the seismic events observed on the Apollo 12 ALSEP PSE which occur near the time of earth-moon perigee likely originate in the vicinity of Fra Mauro.<sup>1</sup> He also conjectures that gases may be released at these times, and has suggested that earth-based astronomers look for these transient gas events. Geological evidence indicates a potential transient gas source near the southern edge of the Fra Mauro Crater, about 100 km south of the proposed Apollo 14 landing point.<sup>2</sup> A study on the detection of the near-simultaneous seismic and transient gas events by using the Apollo 14 ALSEP PSE and Cold Cathode Gauge Experiment (CCGE) suggested that the CCGE should be deployed south of the LM with the entrance aperture facing south.<sup>3</sup> (Positioning of the PSE is unimportant).

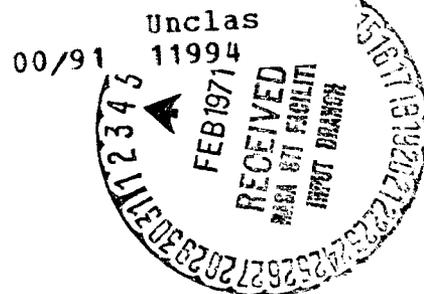
The Apollo 14 Crew Procedures document, issued in November, indicated that ALSEP would be placed >300 feet west of the LM but the CCGE along with the Suprathermal Ion Detector Experiment (SIDE) (SIDE and CCGE share common electronics) would be deployed northeast of the emplaced ALSEP Central Station (C/S) with the CCGE entrance aperture facing north.

In order to optimize the Apollo 14 ALSEP scientific return, we recommended that the SIDE/CCGE be deployed south of the ALSEP C/S as well as south of the LM with the CCGE entrance aperture facing south. However, changing the ALSEP deployment at this late date required special approval from the Crew Procedures Control Board (CPCB). Working with the SIDE/CCGE principal investigators, J. Freeman, F. Johnson, D. Evans, and F. Herbert of MSC/S&AD, I prepared a request for an ALSEP deployment change that was presented to the CPCB on December 14.<sup>4</sup> The Board accepted the recommendation but withheld final approval until a final deployment simulation with the Apollo 14 crew showed no problems with the recommended changes in the SIDE/CCGE deployment.

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(NASA-CR-116339) STATUS OF APOLLO 14 ALSEP/CCGE DEPLOYMENT (Bellcomm, Inc.) 5 P

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On December 15 at KSC, the Apollo 14 backup crew, Eugene Cernan (CMP) and Joe Engle (LMP), performed an EVA-1 simulation with the new ALSEP deployment layout shown in the attached figure. Cernan and Engle completed the ALSEP deployment simulation with ease. After completion of the simulation, the backup crew discussed the ALSEP deployment with the prime crew, Alan Shepard (CMP) and Ed Mitchell (LMP), and concluded that the deployment scheme shown should present no problems. Subsequently the CPCB approved the suggested CCGE deployment scheme.

*G. K. Chang*  
G. K. Chang

2015-GKC-dmu

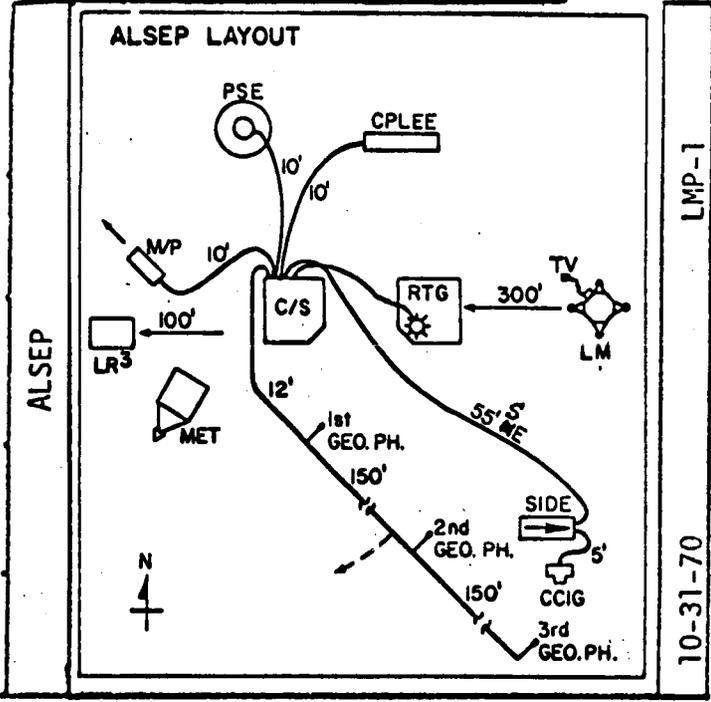
Attachment

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## REFERENCES

1. "Apollo 12 Seismic Experiment Links Red Lunar Glow to Quakes," reported by Z. Strickland in Aviation Week and Space Technology, August 10, 1970.
2. J. W. Head, "Possible Sources of Transient Events in the Fra Mauro Region," Bellcomm Memorandum for File, B70 09046, September 18, 1970.
3. G. K. Chang and T. T. J. Yeh, "Simultaneous Detection of Lunar Seismic and Transient Gas Events," Bellcomm Memorandum for File, B70 09047, September 18, 1970.
4. Crew Procedures Control Board (CPCB) Meeting Agenda Monday, December 14, 1970.

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Deployment - Case 340

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